AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method for configuring a microcontroller, comprising:

displaying a collection of virtual blocks in a design system with each virtual block in said collection corresponding to a programmable block in said microcontroller;

receiving a selection of a user module defining a function;

assigning a virtual block taken from said collection to said user module; and

automatically constructing source code comprising configuration information for a programmable block of said microcontroller corresponding to said virtual block wherein said configuration information is used to cause said programmable block to implement said function.

2. (Original) The method of Claim 1, wherein said function comprises a pulse width modulator.

3. (Original) The method of Claim 1, wherein said function comprises a timer.

4. (Original) The method of Claim 1, wherein said function comprises an analog-to-digital converter.

5. (Original) The method of Claim 1, wherein said function comprises a digital-to-analog converter.

6. (Original) The method of Claim 1, wherein said function comprises a counter.

7. (Original) The method of Claim 1, wherein said function comprises a signal amplifier.

8. (Original) The method of Claim 1, wherein said function provides serial communication.

9. (Original) The method of Claim 1, wherein said collection is displayed as a two dimensional array of programmable analog virtual blocks and programmable digital virtual blocks.

10. (Original) The method of Claim 1, wherein said assigning further comprises assigning a second virtual block to said user module.

11. (Previously Presented) The method of Claim 1, wherein said source code comprises a symbolic name for a register address in said programmable block.

12. (Original) The method of Claim 11 wherein said symbolic name is derived from said function.

13. (Previously Presented) A method of configuring a microcontroller having a programmable block, said method comprising:

receiving a selection of a user module defining a circuit design;

assigning a virtual block in a design system where said virtual block corresponds to said programmable block; and

automatically constructing assembly code comprising configuration information for said programmable block to implement said circuit design, wherein said assembly code is constructed from template assembly code by substituting information specific to said user module and information specific to said circuit design for generic information in said template assembly code.

14. (Previously Presented) The method of Claim 13, wherein said automatically constructing further comprises:

computing a register address for a register within said programmable block;

determining a symbolic name for said register address, said symbolic name corresponding to said user module and said circuit design; and

substituting said symbolic name for a generic name in said template assembly code.

15. (Canceled).

16. (Previously Presented) The method of Claim 13, wherein said automatically constructing further comprises:

determining a symbolic name corresponding to said user module and said circuit design;

computing a register address for a register within said programmable block;

assigning said symbolic name to said register address; and

placing said symbolic name into said assembly code in place of a generic name provided in said template assembly code.

17. (Previously Presented) A method of configuring a microcontroller having a programmable block, said method comprising:

receiving a selection of a user module defining a function;

assigning a virtual block in a design system where said virtual block corresponds to said programmable block; and

automatically constructing assembly code with personalization information specifying said programmable block as performing said function, wherein said assembly code is constructed from template assembly code by substituting information specific to said user module and information specific to said function for generic information in said template assembly code.

18. (Previously Presented) The method of Claim 17, wherein said automatically constructing further comprises:

computing a register address for a register within said programmable block;

determining a symbolic name for said register address, said symbolic name corresponding to said user module and said function; and

placing said symbolic name into said assembly code.

19. (Previously Presented) The method of Claim 18, wherein said placing further comprises:

substituting said symbolic name in place of a generic name provided in said template assembly code.

20. (Previously Presented) The method of Claim 17, wherein said constructing further comprises:

determining a symbolic name corresponding to said user module and said function;

computing a register address for a register within said programmable block;

assigning said symbolic name to said register address; and

placing said symbolic name into said assembly code.

21. (Previously Presented) A method of configuring a microcontroller having a programmable block, said method comprising:

receiving a selection of a user module defining a function having a control parameter;

assigning a virtual block in a design system where said virtual block corresponds to said programmable block; and

automatically constructing assembly code for operating said control parameter within said programmable block, wherein said assembly code is constructed from template assembly code by substituting information specific to said user module, information specific to said function and information specific to said control parameter for generic information in said template assembly code.

22. (Previously Presented) The method of Claim 21, wherein said constructing further comprises:

computing a register address for a register within said programmable block;

determining a symbolic name for said register address, said symbolic name corresponding to said user module and said function; and

placing said symbolic name into said assembly code.

23. (Previously Presented) The method of Claim 22, wherein said placing further comprises:

substituting said symbolic name in place of a generic name provided in said template assembly code.

24. (Previously Presented) The method of Claim 21, wherein said constructing further comprises:

determining a symbolic name corresponding to said user module and said function;

computing a register address for a register within said programmable block;

assigning said symbolic name to said register address; and

placing said symbolic name into said assembly code.

25. (Previously Presented) A method of configuring a microcontroller having a programmable block, said method comprising:

receiving a selection of a user module defining a function having a control parameter;

assigning a virtual block in a design system where said virtual block corresponds to said programmable block;

automatically constructing an assembly code routine using said control parameter, wherein said assembly code routine is constructed from template

assembly code by substituting information specific to said user module, information specific to said function and information specific to said control parameter for generic information in said template assembly code; and

constructing a header file referencing said assembly code routine.

26. (Previously Presented) A computer system comprising a processor coupled to a bus, a display device coupled to said bus, and a memory coupled to said bus, said memory containing instructions to implement a method for configuring a microcontroller, said method comprising:

displaying a collection of virtual blocks in a design system with each virtual block in said collection corresponding to a programmable block in said microcontroller;

receiving a selection of a user module defining a function;

assigning a virtual block taken from said collection to said user module; and

automatically constructing assembly code holding configuration information for a programmable block corresponding to said virtual block to perform said function.

27. (Original) The computer system of Claim 26, wherein said collection is displayed as a two dimensional array.

28. (Original) The computer system of Claim 26, wherein said assigning further comprises assigning a second virtual block to said user module.

29. (Previously Presented) The computer system of Claim 26, wherein said assembly code further comprises a symbolic name for a register address in said programmable block.

30. (Original) The computer system of Claim 26 wherein said symbolic name is derived from said function.

31. (Previously Presented) A computer implemented method of generating program information for a programmable electronic device, said method comprising:

a) accessing a selected user module, wherein said user module is defined by a first data structure;

b) placing said user module within a second data structure that defines a hardware resource of said programmable electronic device;

c) using said first and second data structures to automatically generate first source code for realizing said user module within said hardware resource; and

d) saving said first source code in a computer file.

32. (Previously Presented) A method as described in Claim 31 further comprising:

e) accessing parameter values that define the behavior of said user module such that it operates in a prescribed manner;

f) automatically generating second source code, based on said parameter values, for causing said user module of said hardware resource to behave in said prescribed manner; and

g) saving said second source code in a computer file.

33. (Original) A method as described in Claim 32 further comprising using said first and second source code to program said programmable electronic device.

34. (Original) A method as described in Claim 33 wherein said programmable electronic device is a microcontroller.

35. (Original) A method as described in Claim 31 wherein said a) and said e) are performed using a graphical user interface.

36. (New) The method of Claim 1 wherein said automatically constructing source code comprises:

reading template files;

substituting information specific to said user module, information specific to said function and information specific to a control parameter of said function for generic information in said template file to produce assembly, include and header files;

compiling said assembly, include and header files to produce an executable file;

downloading said executable file as a code block to a memory of said microcontroller; and

executing said code block to configure said programmable block.